

PIVOT COUPLER FOR PIVOTALLY CONNECTING A MONITOR TO A STAND

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

The present invention relates to a pivot structure and, more particularly, to a pivot coupler for use to pivotally connect a monitor, for example, a flat-panel display to a stand, enabling the display to be turned steplessly to the desired angle of inclination.

10 2. Description of Related Art

Following fast development of high technology, space-saving flat-panel displays have been intensively used to substitute for heavy and bulky CRT monitors. For example, standard desktop computer system uses a LCD display instead of a conventional CRT monitor.

15 A flat-panel display generally uses a pivot coupler to pivotally connect the display panel to the stand so that the user can adjust the display panel to the desired angle of inclination. A pivot coupler for this purpose is generally comprised of a hinge base, and a hinge bracket pivoted to the hinge base. The display panel is fastened to the hinge bracket, and turned
20 with the hinge bracket relative to the hinge base to the desired angle of inclination.

According to the aforesaid conventional pivot coupler, plastic friction members are provided between the hinge base and the hinge bracket to produce a friction resistance that holds the hinge bracket in the adjusted

position. The plastic friction members are specially designed and formed of special plastics. The use of special plastics greatly increases the manufacturing cost of the pivot coupler. However, the plastic friction members wear quickly with use, and cannot dissipate heat during friction.

5 Further, the aforesaid conventional design uses two tightening up plastic covers to tighten the connection between the hinge base and the hinge bracket. When the friction contact between the plastic friction members loosened, the tightening up plastic covers must be fastened tight further. Because the tightening up plastic covers bear much pressure in axial

10 direction, they tend to break when receiving a high pressure.

Therefore, it is desirable to have a pivot coupler for monitor that eliminates the aforesaid problems.

SUMMARY OF THE INVENTION

15 It is the main object of the present invention to provide a pivot coupler for pivotally connecting a monitor to a stand, which is durable in use and inexpensive to manufacture.

It is another object of the present invention to provide a pivot coupler for pivotally connecting a monitor to a stand, which dissipates heat

20 quickly during friction action of its movable parts.

It is still another object of the present invention to provide a pivot coupler for pivotally connecting a monitor to a stand, which has a simple structure that enables the hinge bracket to be directly turned tightly relative to the hinge base.

To achieve these and other objects of the present invention, the pivot coupler is coupled between a monitor and a stand, comprising: a hinge base, the hinge base having a bottom wall fastened to the stand, and a cylindrical support horizontally extended on a top side of the bottom wall, the cylindrical support having a curved peripheral surface, a left side, a right side, a left locating recess formed in the center of the left side, a left packing piece set mounted in the left locating recess, a right locating recess formed in the center of the right side, a right packing piece set mounted in the right locating recess, and a central axle hole extended through the left locating recess and the right locating recess; a substantially U-shaped hinge bracket, the hinge bracket comprising at least one mounting members, a left side plate, a right side plate, and a top plate, the at least one mounting member affixed to a back side of the monitor, the left side plate and the right side plate respectively suspended at two sides and each having an inner face and an outer face, the top plate connected between the left side plate and the right side plate at a top side, a left through hole cut through the inner face and outer face of the left side plate, a right through hole cut through the inner face and outer face of the right side plate, a left washer mounted in the inner face of the left side plate, and a right washer mounted in the inner face of the right side plate, the top plate having a bottom face; and a shaft inserted through the central axle hole of the hinge base, the left and right through holes of the hinge bracket, the left and right packing piece sets of the hinge base, and the left and right washers of the hinge bracket, the shaft having a stop block formed in one end thereof and stopped outside the outer

face of the left side plate of the hinge bracket and a screw rod axially formed in an opposite end thereof and extended from out of the outer face of the right side plate of the hinge bracket and screwed up with a nut, keeping the left and right packing piece sets of the hinge base respectively disposed in
5 contact with the left and right washers of the hinge bracket.

The friction contact design between the left and right packing piece sets of the hinge base and the left and right washers of the hinge bracket enables the monitor to be steplessly turned to the designed angle of inclination. Because the friction area is between the left and right packing
10 piece sets of the hinge base and the left and right washers of the hinge bracket without causing direction contact between the hinge base and the hinge bracket, it is not necessary to make the hinge base and the hinge bracket with a special material. Therefore, the manufacturing cost of the pivot coupler is greatly reduced. Further, because of low friction between
15 the left and right packing piece sets and the left and right washers, the service life of the prevent invention is prolonged. Due to high heat conductivity, the left and right packing piece sets and the left and right washers dissipate heat efficiently during friction therebetween.

Other objects, advantages, and novel features of the invention will
20 become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a pivot coupler coupled between a monitor and a

stand according to the present invention.

FIG. 2 is an elevational view of a pivot coupler according to the present invention.

FIG. 3 is an exploded view of the pivot coupler shown in FIG. 2.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a pivot coupler is shown installed in between a monitor **91** and a stand **92**.

Referring to FIGS. 2 and 3, and FIG. 1 again, the pivot coupler is
10 comprised of a hinge base **1**, a hinge bracket **2**, and a shaft **3**. The hinge base **1** has a bottom wall **15** fastened to the stand **92**, and a cylindrical support **10** horizontally extended on the top side of the bottom wall **15**. The cylindrical support **10** has a curved peripheral surface **14**, a left side **12**, a right side **13**, a left locating recess **121** formed in the center of the left side **12** and adapted
15 to accommodate a left packing piece set **16**, a right locating recess **131** formed in the center of the right side **13** and adapted to accommodate a right packing piece set **17**, and a central axle hole **11** extended through the left locating recess **121** and the right locating recess **131**. The left packing piece set **16** is comprised of a locating plate **161** and a packing piece **162**. The
20 right packing piece set **17** is comprised of a locating plate **171** and a packing piece **172**. The locating plate **161** or **171** has a plurality of locating notches **163** or **173**. The packing piece **162** or **172** has a plurality of retaining projections **164** or **174** corresponding to the locating notches **163** or **173**. The locating plates **161** and **171** are respectively set in the left locating

recess **121** and the right locating recess **131** at first, and then the packing pieces **162** and **172** are respectively mounted on the locating plates **161** and **171** to force the respective retaining projections **164** and **174** into engagement with the respective locating notches **163** and **173**.

5 The hinge bracket **2** is a substantially U-shaped frame comprising two mounting members **20** respectively fastened to the back side of the monitor **91** by, for example, screws. The hinge bracket **2** further comprises a left side plate **21** and a right side plate **22** respectively suspended at two sides, the left side plate **21** and the right side plate **22** each having an inner
10 face **211** or **221** and an outer face **212** or **222**, a top plate **23** connected between the left side plate **21** and the right side plate **22** at the top, the top plate **23** having a bottom face **231**, a left through hole **213** cut through the inner face **211** and outer face **212** of the left side plate **21**, a right through hole **223** cut through the inner face **221** and outer face **222** of the right side
15 plate **22**, a plurality of retaining holes **214** and **224** respectively formed in the inner faces **211** and **221** of the left and right side plates **21** and **22**, and two washers, namely, the left washer **24** and the right washer **25** respectively mounted in the inner faces **211** and **221** of the left and right side plates **21** and **22**, the washers **24** and **25** each having a plurality of retaining
20 projections **241** or **251** respectively engaged into the retaining holes **214** and **224**.

The shaft **3** is inserted through the central axle hole **11** and the left and right through holes **213** and **223** of the hinge bracket **2**, having a stop block **31** formed in one end thereof and stopped outside the outer face **212**

of the left side plate **21** of the hinge bracket **2** and a screw rod **32** axially formed in the other end thereof and extended out of the outer face **222** of the right side plate **22** of the hinge bracket **2** and screwed up with a nut **4**, keeping the left and right packing piece sets **16**, and **17** respectively closely
5 disposed in contact with the left and right washers **24** and **25**.

The aforesaid packing pieces **162** and **172** and washers **24** and **25** according to the present preferred embodiment are respectively made of medium carbon steel, and the left and right locating plates **161** and **171** are respectively made of galvanized steel. This design saves much the cost.

10 Therefore, by means of the hinge bracket **2** and the shaft **3**, the monitor **91** can be turned relative to the hinge base **1** and the stand **92** to the desired angle of inclination steplessly. Further, a limit slot **141** is formed in the curved peripheral surface **14** of the hinge base **1**, and a protruded stop member **232** is formed in the bottom face **231** of the top plate **23** of the
15 hinge bracket **2** and movably inserted into the limit slot **141** of the hinge base **1** to limit the turning angle of the monitor **91**. When turning the monitor **91** with the hinge bracket **2** relative to the hinge base **1**, the left and right packing piece sets **16** and **17** are respectively rubbed over the left and right washers **24** and **25**, producing a contact friction, i.e., the friction area is
20 between the left and right packing piece sets **16** and **17** and the left and right washers **24** and **25** without causing direction contact between the hinge base **1** and the hinge bracket **2**. Therefore, the manufacturing cost of the hinge base **1** and the hinge bracket **2** can greatly be reduced because it is not necessary to make the hinge base **1** and the hinge bracket **2** with a special

material. Further, because of low friction between the left and right packing piece sets **16** and **17** and the left and right washers **24** and **25**, the service life of the prevent invention is prolonged. Due to high heat conductivity, the left and right packing piece sets **16** and **17** and the left and right washers **24** and **25** dissipate heat efficiently during friction therebetween.

Further, a left shaft cover **81** and a right shaft cover **82** are respectively axially covered on the left side **12** and right side **13** of the cylindrical support **10** of the hinge base **1**. Because the hinge base **1** and the hinge bracket **2** be tightened directly by the nut **4** on the shaft **3** but not by the shaft covers **81** and **82**, fastening up the hinge base **1** and the hinge bracket **2** does not cause the shaft covers **81** and **82** to break, i.e., the shaft covers **81** and **82** are used as ornamental members but not fastening members.

There are also provided two spring washers **61** and **62** mounted on the shaft **3** and stopped between the nut **4** and the outer face **222** of the right side plate **22** of the hinge bracket **2**. The spring washers **61** and **62** impart an axially extended spring force to force the left and right packing piece sets **16** and **17** into close contact with the left and right washers **24** and **25**, i.e., the axially extended spring force of the spring washers **61** and **62** produces a torsion compensation effect, holding the left and right packing piece sets **16** and **17** in close contact with the left and right washers **24** and **25**. One single spring washer may be used instead of the aforesaid two spring washers **61** and **62**.

A prototype of pivot coupler for monitor has been constructed with

the features of FIGS. 1~3. The pivot coupler for monitor functions smoothly to provide all of the features discussed earlier.

Although a particular embodiment of the present invention has been described in detail for purposes of illustration, various modifications
5 and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.